



Food Balance Sheets

A flexible resource for teaching about food security



Instructions and answers for teachers

These instructions should accompany the OCR resource 'Food Balance Sheets' activity which supports OCR A Level Geography

Food Balance Sheets - Saudi Arabia and the United Kingdom

Saudi Arabia
Population (thousands): 1961: 4 023 2011: 27 702

Food group	Domestic Supply (1000 metric tons)			Per capita Supply (kg per year)		
	Produced	Imported	Total	Quantity	Quality	Calorie
Total	400	2 900	3 300	1 97	67	95 25
Total Vegetables Products	2 400	1 500	3 900	1 24	42	16 25
Total Animal Products	400	1 400	1 800	1 08	35	4 00
Cereals	1 414	11 992	13 406	1 438	24	4
Wheat	1 184	2 280	3 464	768	29	4
Rice	0	1 011	1 011	768	6	1
Maize	20	1 680	1 700	199	5	2
Other Cereals	400	200	600	23	1	0
Legumes	0	2	2	0	0	0
Canola	465	381	846	32	0	0
Proteins	2 018	1 000	3 018	214	2	6
Vegetables	1 688	2 007	3 712	210	2	1
Oilseeds	14	0	14	0	0	0
Meat	184	680	1 078	248	28	12
Milk	2 242	2 201	4 443	144	6	7
Fish	0	28	28	14	2	1

United Kingdom
Population (thousands): 1961: 53 054 2011: 62 672

Food group	Domestic Supply (1000 metric tons)			Per capita Supply (kg per year)		
	Produced	Imported	Total	Quantity	Quality	Calorie
Total	2 400	2 900	5 300	1 00	54	108 108
Total Vegetables Products	2 400	1 500	3 900	1 24	42	16 25
Total Animal Products	400	1 400	1 800	1 08	35	4 00
Cereals	21 488	0 145	21 633	402	24	4
Wheat	15 257	2 006	17 263	750	24	3
Rice	0	493	493	75	1	0
Maize	0	1 146	1 146	25	1	0
Other Cereals	6 301	2 500	8 801	157	6	0
Legumes	0	27	27	0	0	0
Canola	0	0	0	0	0	0
Proteins	14 014	1 742	15 756	1 19	6	0
Vegetables	2 081	4 138	6 219	10	3	1
Fruit	4 620	6 000	10 620	133	2	1
Oilseeds	0	284	284	3	0	0
Meat	6 470	6 000	12 470	140	1	0
Milk	2 812	2 019	4 831	444	28	38
Fish	13 948	2 471	16 419	243	15	21
Fish	171	153	324	6	0	0

The Activity:

This resource comprises of 3 tasks.



This activity offers an opportunity for English skills development.



This activity offers an opportunity for maths skills development.

Associated materials:

'Food Balance Sheets' Lesson Element learner activity sheets:

- Saudi Arabia and the United Kingdom
- China and Mexico
- Cuba and Iceland
- Kenya and India
- USA and Sudan



This resource is an exemplar of the types of materials that will be provided to assist in the teaching of the new qualifications being developed for first teaching in 2016. It can be used to teach existing qualifications but may be updated in the future to reflect changes in the new qualifications. Please check the OCR website for updates and additional resources being released. We would welcome your feedback so please get in touch.





Introduction to *Food Balance Sheets*

Food Balance Sheets present a detailed overview of a country's food supply over a specified year. The **quantity of food produced** in that country together with the **amount imported** gives the **total supply** available during that year for a wide range of basic food items. These figures are then expressed in terms of per capita supply available for human consumption. The data is also expressed in terms of dietary energy value, protein and fat content.

A crucial part of the study of food security is for students to understand that problems exist across the development continuum. In addition, what people eat and how much is governed by a range of factors.

The *Food Balance Sheets* provide a resource where by a range of countries can be compared in terms of what they eat, why and how it is changing. The data raises many questions and issues, and students should be encouraged to evaluate what can be concluded from the data but importantly what it does not show.

Background information for teachers

Ten countries have been sampled from different continents and with varying levels of economic development. The simplified *Food Balance Sheet* has been produced using data from the Food and Agricultural Organisation (FAO) statistical resources. The balance sheets can be copied and laminated to give a resource which can be used in a range of teaching activities throughout the Future of Food Unit.

The elements included on the *Food Balance Sheet* are:

1. **Total food supply per head of the population:** this is as a simple calculation of supply divided by total population. It does not give an indication of the different levels of food supply within a country through different socio economic groups. It does not take account of loss due to waste and it is not a 'consumption' figure – it shows quantity available per head of population.
2. **Dietary energy value divided into protein and fat (Gr/day)**
3. **Total per capita supply in terms of vegetable and animal products.**
4. **The domestic supply of a range of food groups (internal production + imports)**
5. **Supply available per capita of different food groups**





Food groups cover the following

Cereals (with sub categories of wheat, rice and maize) Maize includes a variety of 'corn' products. Maize flour or meal is made into a thick porridge in many cultures, it can also be a replacement for wheat flour to make baked products.

Starchy roots (with sub categories of cassava and potatoes) cassava is the third largest source of carbohydrates in the Tropics after rice and maize. It is drought tolerant and can grow in marginal soils. It is used like potato in many diets in poor countries.

Vegetables, Fruit, Coffee, Alcohol, Meat (which includes mutton, goat and poultry), **Milk** (excluding butter) and **Fish** (freshwater and seafood).

Change over time

Food Balance Sheets can be used to show trends over time in national food supply and dietary habits, together with the extent to which the food supply of a country as a whole, can meet nutritional requirements. To give some idea of changes over time, on each *Food Balance Sheet* figures in red for **TotalKcal/day**, **Protein** and **Fat content** and **proportion of vegetable and animal products** are from 1961, allowing a comparison to 50 years ago.

To aid analysis, population totals (in thousands) are also given for 1961 and 2011.

The ten countries sampled are:

UK, USA, Saudi Arabia, Iceland, China, Mexico, Cuba, Kenya, India and Sudan.

Imports

The *Food Balance Sheets* can also be used to compare who are major importers of food.





Task Instructions

The *Food Balance Sheets* can be used in a variety of ways, below for suggestions:

Task 1: How does food supply vary between countries at different levels of economic development?

Students can be allocated a country in pairs or groups and they must:

- Describe the food supply issues that country faces,
- Put forward a viable government plan to address the issues and present their findings to the rest of the class for debate and questioning.

After listening to the individual country presentations students can investigate and report on how key Agencies are attempting to tackle global food security, for example:

- Oxfam
- World Food Programme
- UN Food Programme

Skills: Analysis and interpretation of numerical data, presentation skills.

Task 2: What factors are responsible for what people eat and how much?

The *Food Balance Sheets* can be distributed in groups, pairs or individually.

Students use the data to create and present a **Country Profile** to show the average daily calorie intake and how it is comprised.

Students then have to research the factors; which determine the country profile by considering; climate, availability, cost and cultural preferences.

Stretch and challenge: At a basic level the vegetable and animal product figures can be used or at a higher level the different food categories.

Skills: Analysis and interpretation of numerical data, data presentation, informed and critical questioning, drawing on wider evidence to make conclusions.





A Level Geography

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Task 3: What is the link between socio-economic level and food security?

Students can use the data to test the strength of relationships between variables on the Food Balance Sheets (for example the relationship between daily calorie intake and population size) or they can be asked to research and choose a variable not given on the Balance Sheet (for example the relationship between daily calorie intake and life expectancy or infant mortality). Alternatively they can relate the food intake profile to specific dietary health issues eg: daily calorie intake and diabetes.

Stretch and challenge: The statistical tests if worked in full provide the opportunity for stretch and challenge. Most correlation tests also require a sample size of 10 to 15 minimum so students must choose 5 additional countries from the FAO statistical resources. Devise a null hypothesis, create a table in Excel and enter the data sets. Work through the correlation test, once the value has been calculated, test its significance and analyse the result.

Skills: Use of a scatter graph to plot and analyse relationships between variables.

Use of relational statistical tests:

- Spearman's Rank Correlation Coefficient
- Pearson's Product Moment Correlation Coefficient



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